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Controlled release of doxorubicin from chitosan- poloxamer based pH and temperature sensitive nanogels

Govind Soni and Khushwant S Yadav
Rajeev Gandhi College of Pharmacy, India

Doxorubicin, a potent anticancer drug associated with cardiotoxicity and low oral bioavailability, was loaded into chitosan-poloxamer based nanogels to improve its performance. The copolymer compositions had significant effect on swelling behavior of the nanogels and the release of DOX at different pH and temperatures. The Dox -loaded chitosan- poloxamer nanogels were able to reduce the burst release effect and had a controlled release upto 48 hours. The nanogels showed a pH sensitive drug release and were governed by zero-order kinetics and followed Fickian diffusion mechanism. Such pH sensitive nanogels were stable when packed in hard gelatin capsules. The results indicated the potential of doxorubicin loaded nanogel for oral chemotherapy.

govind.soni113@gmail.com